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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,224	12/20/2001	Takashi Katsumata	11-076	4216

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EXAMINER

HANLEY, JOHN C

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 01/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/022,224

Applicant(s)

KATSUMATA ET AL.

Examiner

John C Hanley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Drawings

1. The proposed changes to Figures 1 and 4 were received on 10/6/03. These changes are approved. However, Figure 4 is objected to based on the amendment added to the specification on page 6, line 17, which refers to line A-A in Figure 4, which is not present in the drawings.

Specification

2. Because of the numerous amendments made to the specification, a substitute specification incorporating the amendments is required. However, objection is made to some of the requested amendments to the specification:

The description of Figure 2 in the amendment added to page 6, line 17, contains a reference to line A-A in Figure 4 that is does not appear in that figure either originally or as amended;

The amendment added to page 8, line 15, still contains an improper reference to teeth 34;

The amendment to page 10, line 21 has not been entered because it does not properly show what has been added/deleted, and it is further unclear what is intended to be amended, because it adds a duplicate of the sentence beginning with the next paragraph of the specification; and,

In the amendment to page 16, line 20, the second reference to electrode 50 is incorrect, because the drive electrode is labeled "40" in the specification.

3. The remaining requested amendments to the specification and abstract are approved.

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Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-4, 6, 13, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi (US 5,969,225) in view of Itoh (US 6,119,518).

6. Kobayashi, Figure 8, shows a semiconductor device for sensing angular frequency having a fixed substrate formed of, for example, a high resistance silicon material (insulation), the substrate being formed in a rectangular shape. Also included is a movable portion supported for movement in an x direction by application of a capacitance driving means (input means), and a detection means for detecting capacitive variation (output means) in a y direction caused by driving the movable portion by the input means. The input and output electrodes associated with the input and output means, respectively, are arranged on different sides of the rectangular shape. In column 4, lines 11+, Kobayashi specifically recognizes the problem of parasitic capacitance causing leakage of drive signals into the detecting means, and specifically motivates one to reduce the leakage. Other than the lack of specific teachings of electrode leads and a circuit substrate inherently required and obvious to complete the device for its intended use, Kobayashi lacks a specific teaching of shielding means to reduce cross talk.

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Electrostatic shielding is a well-known engineering solution to the problem of capacitive coupling. However, Itoh specifically teaches to use grounded shields for electrostatically isolating the driving terminals and the detecting terminals of an angular velocity sensor. It would have been obvious to one skilled in the art at the time of applicant's invention to reduce capacitive coupling between the input and output of Kobayashi by the use of grounded electrostatic shields as taught in Itoh, since Kobayashi recognizes the need to reduce the problem in such a sensor layout, and Itoh also recognizes the same problem and offers an alternative solution. The physical placement of the shield near any one of the electrodes to be shielded would have been obvious to anyone skilled in the art of shielding, so long as the shield is placed between the circuits to be shielded from one another. The "predetermined" distances and spacings recited in new claims 14 and 16 would be inherently obvious in the placement of a shield between two elements to shield them from one another.

7. Applicant's remarks have been considered but are unpersuasive. A conductive pad on the substrate is an obviously convenient method of either providing a conductor between the elements to be shielded, and/or to secure a shield wire in such a position. An electrostatic shield, by definition, must be physically positioned between circuits to be shielded from one another. Itoh's shield lines are between the circuits to be shielded from one another. Further, Itoh, at the bottom of column 1, discusses use of an earth plate in the prior art for isolating the driving terminals. The plate is arranged between the wiring lines of the individual terminals. Applicant's remarks with respect to monitor electrodes are irrelevant since no monitor electrodes appear in the claims. Further, the examiner again points to Lemkin et al, cited in the prior office action, as an example of pads and wires connected

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to a substrate to provide shielding. Further, applicant misinterprets the examiner in his "official notice" argument. The examiner made no official notice of a character similar to applicant's statement.

8. Claims 5, 7-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi in view of Itoh as applied to claims 1-4, 6 and 13, above, and further in view of Ward (US 6,445,195). The combination of Kobayashi in view of Itoh lacks a teaching of monitor and dummy electrodes. Ward teaches the use of pick-off electrodes (monitor electrodes) to feedback positional information of the movable portion to correct and control the drive means. Ward further recognizes the problem of signal coupling between the drive electrodes and both the monitor and detector electrodes. Ward further teaches to detect drive feed through via a sensor and nulling the measured components by adjusting the amplitude of the drive signal(s). It would have been obvious to one of ordinary skill in the art at the time of applicant's invention to provide monitor electrodes to the device of Kobayashi, as combined with Itoh, to better control the driving means of Kobayashi, as taught in Ward. In view of the fact that the monitor electrodes are recognized by Ward as having drive feed through problems along with the detector electrodes, it would have been further obvious in view of Itoh to shield the monitor electrodes from the drive electrodes as well. It would have been further obvious in view of Ward to use means for sensing the drive feed through to obtain a signal to null the feed through in the drive electronics. The "predetermined" distances and spacings recited in new claim 15 would be inherently obvious in the placement of a shield between two elements to shield them from one another, as set forth in the previous rejection, above.

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9. Applicant's remarks have been read and considered, but are unpersuasive for reasons corresponding to similar issues found in the rejection of Claims 1-4, 6, 13, 14 and 16, set forth above. Further applicant's argument with respect to the dummy electrode is not persuasive. Ward specifically teaches to use a trace source (column 7, lines 32+ to provide signal(s) use to null errors in the drive circuit. This appears to be what applicant does in figure 5 of the drawings, where the signal from dummy electrode element 80 is fed back to subtractor 99. Thus, it is unclear how applicant's broad recitation of the dummy electrode differs from Ward, or even a monitor electrode.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C Hanley whose telephone number is 703-305-5130 until his anticipated move date of January 27, 2004, and 571-272-2195 thereafter. The examiner can normally be reached on M-F 9AM-5:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 703-306-4705. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCH



HEZRON WILLIAMS
SUPERVISORY PATENT EXAMINER
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